

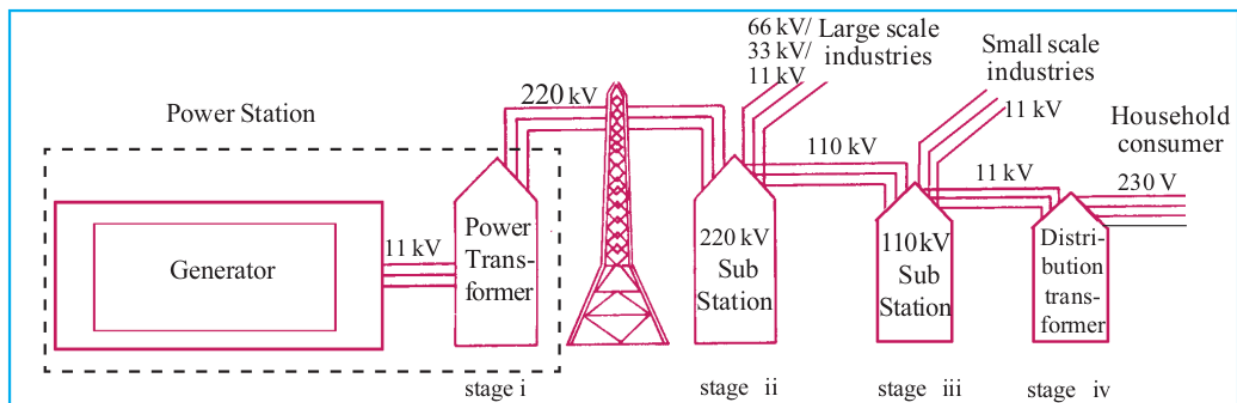
PHYSICS - X-PART-12 CLASS 26



Power Transmission and Distribution

Transmission loss.

- When electricity is transmitted to distant places there is loss of energy in the conductors in the form of heat. This is known as transmission loss.
- In India electricity is produced at 11 kV (11000 V) in power stations.
- What are the methods to reduce the heat generated?
 - Reduce current
 - Reduce Resistance
 - Reduce the time taken
- How can we reduce the current without change in power? Find out on the basis of the equation $P = V \times I$.
By increasing the Voltage.
- What is the method to reduce the transmission loss?
The voltage is increased up to 220 kV at the power station itself (Depending on the distance to which the transmission is to be done, different voltages like 110 kV, 400 kV, are also made use of). As a result the current and loss of energy in the form of heat decreases.



Different stages of electric power transmission

- ➔ Which type of transformer is there in a power station?
Step up transformer
- ➔ Which type of transformer is there in a sub station?
Step down transformer
- ➔ Which type of transformer is a distribution transformer?
Step down transformer
- ➔ How many lines reach the distribution transformer?
3 lines (11 KV)
- ➔ How many lines go out of the distribution transformer?
4 lines (3 Phase line and 1 neutral line)
- ➔ What is the potential difference between 2 phase lines?
400 V
- ➔ What is the potential difference between any one phase line and the neutral line?
230 V
- ➔ What is the potential difference between the earth and the neutral line?
0 V

→ **Which are the lines essential for household electrification?**

Phase line, Neutral line, and Earth line.

→ **If a person standing on the earth touches a phase line, will she get an electric shock? Why?**

The person will get an electric shock because there is a potential difference (230 V) between phase and earth.

Worksheet

State whether the following statements are true or false

a) The potential difference between earth and neutral line is zero

b) Neutral line and earth line are at different potential.

c) A person touching the neutral line standing on the earth will not get electric shock.

d) A person touching the phase line from the earth will not get electric shock.